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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,214	12/26/2001	Luc Desnoyers	P3030R1C11	6102

7590 03/23/2005

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EXAMINER
KOLKER, DANIEL E

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,214	DESNOYERS ET AL.	
	Examiner	Art Unit	
	Daniel Kolker	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 Dec 2001, 4 Sep 2002, 14 Oct 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-27, 30, 31, 34 - 41* is/are rejected.

7)☒ Claim(s) *28, 29, 32, 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3 May 2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The amendments filed 26 December 2001 and 4 September 2002 have been entered. Claims 22 – 41 are under examination.

Priority

35 U.S.C. § 119(e) states that:

> An application for patent filed under section 111(a) or section 363 of this title for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in a provisional application filed under section 111(b) of this title, by an inventor or inventors named in the provisional application, shall have the same effect, as to such invention, as though filed on the date of the provisional application filed under section 111(b) of this title, if the application for patent filed under section 111(a) or section 363 of this title is filed not later than 12 months after the date on which the provisional application was filed and if it contains or is amended to contain a specific reference to the provisional application.

The preliminary amendment filed 4 September 2002 indicates that this application is a continuation of 09/931836, which is a continuation of PCT/US00/05601, which claims priority to provisional application 60/131270, filed 27 April 1999. While applicant disclosed the nucleic acid sequence in said provisional application, no use for either the nucleic acid or the encoded protein was disclosed.

Applicant is advised that the instant application can only receive benefit under 35 U.S.C. § 119(e) from an earlier application which meets the requirements of 35 U.S.C. § 112, first paragraph, with respect to the now claimed invention. Because the provisional application filed 27 April 1999 does not meet the requirements of 35 U.S.C. § 112, first paragraph, it is unavailable under 35 U.S.C. § 119(e). The effective priority date of the instant application is considered to be the filing date of the international application PCT/US00/05601, filed 1 March 2000.

Should applicant argue that the provisional application filed 27 April 1999 in fact is an enabling disclosure, applicant should provide reasoning as to why the provisional application is an enabling disclosure. For example, this could be accomplished by indicating the page and line numbers where PRO4408 was found to test positive in assay number 107, Fetal Hemoglobin Induction in an Erythroblastic Cell Line.

Information Disclosure Statement

The information disclosure statement filed 3 May 2002 has been considered. The database search results demonstrate that applicants are aware of nucleic acids with identity or

homology to the one claimed herein. However, as the BLAST results do not give sufficient identifying information, the examiner cannot determine if said sequences constitute prior art.

Specification

The disclosure is objected to because of the following informalities:

The title is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The specification includes browser-executable hyperlinks. This objection could be overcome by deleting all occurrences of the text "http://".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 22 – 27, 30 – 31, and 35 – 41 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the nucleic acid of SEQ ID NO:60, or nucleic acids which encode the protein of SEQ ID NO:61, does not reasonably provide enablement for nucleic acids 80, 85, 90, 95 or 99% identical to SEQ ID NO:60, nor which encode a protein 80, 85, 90, 95 or 99% identical to the protein of SEQ ID NO:61, nor nucleic acids which hybridize to any of the above. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is "undue" include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3) relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the invention. *In re Wands*, 858 F.2d 731 737, 8 USPQ2d 1400 1404 (Fed. Cir. 1988).

The claims are directed to isolated nucleic acids having at least 80% identity to a SEQ ID NO:60 or that encode the protein of SEQ ID NO:61 with or without its signal peptide, or which

encode the extracellular domain of SEQ ID NO:61 with or without its signal peptide, or nucleic acids at least 80% identical to such encoding nucleic acids. Dependent claims are directed to vectors and host cells comprising the isolated nucleic acids. The specification contains numerous asserted utilities including use as hybridization probes, in chromosome and gene mapping, in the generation of anti-sense RNA and DNA, to identify molecules that bind to PRO994 (including agonists and antagonists), to make "knock-out" mice or other animals, in gene therapy, as molecular weight markers, therapeutic agents, and for the production of antibodies. None of these asserted utilities is specific for the disclosed PRO4408 nucleic acids or protein, as each of the aforementioned utilities could be asserted for any naturally occurring protein, and further, the only asserted utility that requires any feature or activity that is specific to the disclosed PRO4408 is the ability of the protein to induce fetal hemoglobin in an erythroblastic cell line.

Because the claimed nucleic acids are described at least in part in terms of the protein that might be encoded, the scope of the protein itself must be considered: The specification (page 151, line 37 – page 152, line 1) teaches that the nucleic acid encoding PRO4408 has (unspecified) homology to the nucleic acids which encode the following Dayhoff sequences: P_R27897, P_R49942, PBP_RAT, CELF40A3_3, D1ONCVO, PC4214, OV16_ONCVO, P_R27718, GEN10789, and OBA5_DROME. However, the instant specification fails to indicate the degree of homology or whether the PRO4408 protein has any homology thereto. The specification (Figure 30) discloses several important features of the amino acid sequence, but does not indicate the presence of a transmembrane domain, nor which end of the that the amino acid sequence might be intracellular domain and which might be the extracellular domain if in fact the protein is a transmembrane protein.

The sole disclosed utilitiy that is determined by the examiner to meet the requirements 35 U.S.C. § 101 is the use of the protein in inducing fetal hemoglobin in an erythroblastic cell line. The claims encompass an unreasonable number of inoperative polynucleotides, which the skilled artisan would not know how to use. As opposed to the claims, what is disclosed about PRO4408 is narrow: a single polypeptide with the ability to induce fetal hemoglobin in an erythroblastic cell line.

There are no working examples of nucleic acids less than 100% identical SEQ ID NO:60. There is only one function attributed to the protein PRO4408 (inducing fetal hemoglobin in an erythroblast cell line) sufficient to meet the requirements of 35 U.S.C. § 112, first

paragraph. While the specification generally describes properties of cytokines, it is acknowledged that cytokines are diverse in function and structure. The specification does not provide guidance for using polypeptides related to (i.e., 80%-99% identity) but not identical to SEQ ID NO:61 which do not have the single specific disclosed activity shown for nucleic acids encoding PRO4408. The claims are broad because they do not require the claimed nucleic acid to encode a polypeptide identical to the disclosed sequence and because the claims have no functional limitation.

Furthermore, protein function cannot be reliably predicted from sequence homology. For example, Transforming Growth Factor (TGF-beta) Family OP-1 induces metanephrongenesis whereas closely related TGF-beta family members-BMP-2 and TGF-beta1-have no effect on metanephrogenesis under identical conditions (Vukicevic et al., 1996, PNAS USA 93:9021-9026). TGF-beta has recently been found to play a role in signaling that induces the switch from adult to fetal hemoglobin (Miller, 2002. Current Opinion in Hematology 9:87-92; see especially the section entitled Signals beginning on p. 89), and therefore the prior art teachings of Vukicevic on the ability of subtle changes to affect protein function are relevant. Additonally, the post-filing teachings by Liu et al. (2005. Journal of Biological Chemistry 280:7452-7459) indicates that in order to silence the gamma-globin gene in adult erythrocytes, both Oct-1 and GATA-1 binding are necessary (see p. 7458, second column, end of first complete paragraph), and that even single-nucleotide substitutions in the promoter sequence of the gamma-globin gene can interrupt this process (see whole paper). Clearly the interactions between the promoter sequence and the complex of proteins that binds it is exquisitely sensitive to minor sequence variations. The teachings of Miller indicate that hemoglobin switching requires coordination of several factors within the cell (p. 90, first sentence). Taken together with the teaching of Liu et al. and Vukicevic et al., it is clear that even subtle changes in sequences of any of the members can be expected to have major consequences on the activity of the system as a whole. Lal et al. (U.S. Patent 6,063,767) teach a protein (SEQ ID NO:3) which is 98.1% identical to the instantly claimed PRO4408 yet there is no evidence that their protein is capable of inducing fetal hemoglobin. Lal et al. contemplate a number of diseases in which their protein is useful (see, for example, column 19, line 54 – column 21, line 42) but nowhere in their long list of diseases are hemoglobin-related disorders mentioned. In fact, increased expression of their protein seems to lead to differentiation of fetal cells (see column 20, lines 63 – 65),

whereas the instantly claimed PRO4408 leads to a return to the fetal state (i.e. de-differentiation). If anything, it appears very closely related proteins such as that taught by Lal et al. have the opposite effect of PRO4408. Absent a clear disclosure of which elements of PRO4408 are required for its activity, the claims variants of the disclosed nucleic acid that are related only by percentage of sequence identity are not fully enabled.

For these reasons, which include the complexity and unpredictability of the nature of the invention and art in terms of the diversity of proteins and lack of knowledge about functions of encompassed polypeptides structurally related to SEQ ID NO:61, the single limited working example of nucleic acid encoding PRO4408 and its one asserted function, the lack of direction or guidance for using either nucleic acids that are not identical to SEQ ID NO:60 or polypeptides that are not identical to SEQ ID NO:61, and the breadth of the claims for structure without function, it would require undue experimentation to use the invention commensurate in scope with the claims as they are drawn to nucleic acids that encode protein.

With respect to uses of the claimed nucleic acids for purposes other than encoding protein, e.g. diagnostic applications or hybridization use, the specification discloses no condition or disease that can be reliably diagnosed, detected, or treated with the claimed polynucleotides.

The specification also is not enabling of the breadth of claims to nucleic acid molecules that hybridize to the disclosed sequences. It is noted that claims that recite hybridization language are indefinite (see the rejection under 35 U.S.C. § 112, second paragraph, below), and do not recite that the nucleic acid encode a protein, much less one having a specifically disclosed activity. First of all, it is pointed out that the term "hybridize" or "hybridization" generically refers to a process in which a strand of nucleic acid joins or matches up with a complementary strand through the process of base pairing, wherein the process is basically used to locate or identify DNAs encoding specific proteins. It is well established in the art that 15-20 bases have been considered sufficient to achieve this process. For example, Duby et al. (1993. Current Protocols in Molecular Biology 6.4.1 – 6.4.10) teach the methods of screening nucleic acid libraries with oligonucleotides as short as 14-mers. The breadth of the claims includes nucleic acids of as little as 10 nucleotides. With these points in mind, it is the Examiner's position that giving the claims their broadest reasonable interpretation, this language reads on an infinite number of possible DNA sequences for which there is not sufficient enablement.

The examples provided in the specification do not provide a representative number of different DNA sequences that would encode proteins having the desired activity. The mere recitation of percentage homologies and the definitions provided do not serve as sufficient guidance to enable the breadth of the claims for the various DNA sequences claimed. See *Ex parte Forman*, 230 USPQ 546. Since the first paragraph of the statute under 35 U.S.C. § 112 requires that there must be an enabling disclosure to support the breadth of the claims, a review of the specification confirms that the scope of the various DNA sequences that are discussed above have not been enabled. There is but a single nucleic acid disclosed with reference to PRO4408, SEQ ID NO:60. In the absence of sufficient guidance, it would require undue experimentation to enable a commensurate number of the sequences that are encompassed by the claims.

Claims 22 – 27 and 34 – 41 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The deposit of biological organisms is considered by the Examiner to be necessary for enablement of the current invention (see 37 C.F.R § 1.808(a)). Examiner acknowledges the deposit of organisms under accession number ATCC 203971 under terms of the Budapest Treaty on International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure in partial compliance with this requirement. However, in order to be fully compliant with the requirement, applicants must state that the deposit will be maintained for a term of at least 30 years and *at least five (5) years after the most recent request for the furnishing of a sample of the deposit was received by the depository.* See 37 C.F.R. § 1.806.

Claims 22 – 27, 30 – 31, and 35 – 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The claims are drawn to polynucleotides having at least 80%, 85%, 90%, 95% or 99% sequence identity with a particular disclosed sequence, or that merely hybridize to a disclosed

sequence. The claims do not require that the claimed polynucleotide encode a particular protein, nor that any protein encoded thereby possess any particular biological activity, nor any particular conserved structure, or other disclosed distinguishing feature. The specification page 151, line 37 – page 152, line 1) teaches that the nucleic acid encoding PRO4408 has (unspecified) homology to the nucleic acids which encode the following Dayhoff sequences: P_R27897, P_R49942, PBP_RAT, CELF40A3_3, D1ONCVO, PC4214, OV16_ONCVO, P_R27718, GEN10789, and OBA5_DROME. However, the specification fails to indicate the degree of homology or whether the PRO4408 protein has any homology thereto. The structure of the putative PRO4408 peptide is not disclosed as having any transmembrane domains (see Figure 30); but nonetheless claims recite "the extracellular domain". Furthermore, the specification does not indicate which end of the protein would be the extracellular domain, if in fact PRO4408 is a transmembrane protein.

To provide evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claim is a partial structure in the form of a recitation of percent identity. There is not even identification of any particular portion of the structure at either the nucleic acid or amino acid level that must be conserved. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required.

See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird,* 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF'S were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, nucleic acids comprising the sequence set forth in SEQ ID NO:60 or encoding the protein of SEQ ID NO:61, but not the full breadth of the claims meet the written description provision of 35 U.S.C. § 112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22 – 27, 30, 31, and 34 - 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims that recite "the extracellular domain" of the protein are indefinite as no extracellular domain has been described. Therefore, the metes and bounds of the claims cannot be determined. For example, see Claim 22, parts (c) and (d). It is noted that no transmembrane domains are disclosed in Figure 30 of the specification and it is clear from the disclosure that there is no conception of whether PRO4408 is in fact a transmembrane protein, and accordingly, which end of the protein would be the 'extracellular' domain. Therefore the term "the extracellular domain" is indefinite as it is not clear to which extracellular domain applicant intends to refer. Finally, if the protein in fact had an extracellular domain, the recitation of "the extracellular domain. . .lacking its associated signal sequence" (claim 22, part (d), for example) is indefinite as a signal sequence is not generally considered to be part of an extracellular domain, as signal sequences are cleaved from said domains in the process of secretion from the cell.

Claims that recite that the claimed nucleic acid "hybridizes to" another sequence, such as claim 35, are indefinite as there is no limiting definition of such in the specification, and the metes and bounds of that which will hybridize are dependent upon the conditions under which

the hybridization is performed. As the metes and bounds of what will hybridize to a given sequence are entirely dependent upon the conditions of hybridization and washing, the metes and bounds of the claims cannot be determined. With respect to claim 36, although the further limitation that the hybridization conditions are "stringent" is introduced, the term "stringent conditions" is also a relative term, and the metes and bounds of the claim cannot be determined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 22 – 26 and 35 – 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Lal et al. (US Patent 6,063,767, issued 16 May 2000, effective filing date 28 October 1997). The claims are drawn to isolated nucleic acids at least 80, 85, 90, or 95% identical to SEQ ID NO:60, or nucleic acids that hybridize to SEQ ID NO:60, as well as vectors and host cells. Lal et al. teach a nucleic acid of SEQ ID NO:4, that is 96.5% identical to SEQ ID NO:60 from the instant application, thereby meeting the limitations of claims 22 - 26. Bases 1 – 880 of Lal et al. correspond to bases 2 – 880 of SEQ ID NO:60 and the two sequences are 96.5% identical over the entire length of SEQ ID NO:60. Applicant has identified the coding region of SEQ ID NO:60 as the region between nucleotides 89 – 760 (specification, p. 151 lines 31 – 32). Over this region there are only four nucleotide mismatches out of a total of 671 nucleotides. Therefore the sequence from Lal et al. is 99.4% identical to the full-length coding region of SEQ ID NO:60, meeting the limitations of claim 26. Double-stranded DNA sequences which are 100% identical to one another will inherently hybridize; since applicant has clearly contemplated the use of double-stranded nucleic acids (see specification p. 65 – 66) and Lal teaches that hybridization

refers to a process by which complementary strands of nucleic acid bind and the sequence from Lal is 100% identical to SEQ ID NO:60 for over 300 bases, the sequence of Lal will hybridize to SEQ ID NO:60, meeting the limitations of claims 35 – 37. Lal et al. teach inserting their nucleic acid sequences in vectors (column 15) and host cells including yeast (column 15, lines 35 – 36) and CHO cells (column 17), meeting the limitations of claims 38 – 41.

Claims 22 – 26 and 35 – 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Lal et al. (U.S. Patent 5,888,742, issued 30 March 1999, filed 28 October 1997). This patent has the same specification and sequence listing as the '767 patent. The reasons for rejection of the claims are identical to those presented in the preceding paragraph.

Claims 35 – 37 are rejected under 35 U.S.C. 102(b) as being anticipated by locus G27363, published 28 June 1996, as evidenced by Alberts et al (1994. Molecular Biology of the Cell). Bases 2 – 352 of G27363 are 98% identical to the complement of bases 521 – 870 of SEQ ID NO:60, and include a region where 116 bases are identical to said complement. Alberts et al. define hybridization as the "process by which two complementary nucleic acid strands form a double helix during an annealing period". Since the prior art sequence is complementary to a portion of the claimed sequence, the two strands will hybridize, according to the definition provided. The prior art sequence anticipates the claimed nucleic acid sequences.

Conclusion

Claims 22 – 27, 30, 31, and 34 – 41 are rejected. Claims 28, 29, 32, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Kolker whose telephone number is (571) 272-3181. The examiner can normally be reached on Mon - Fri 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached on (571) 272-0829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel E. Kolker, Ph.D.

March 15, 2005

SHARON TURNER, PH.D.
PRIMARY EXAMINER

3-16-05